KNF – Westside Fire Recovery Project
Fisheries ESA consultation – Biological Assessment Addendum
6/19/15

This document summarizes how the Westside Fire Recovery Project (Project) action has evolved from what is proposed and analyzed in the 4/13/15 Biological Assessment (BA), received by NMFS on 4/16/2015. This document will also provide further clarification of several project design and effects analysis considerations contained in the original Project BA. As part of ongoing Project interdisciplinary team analysis, including consultation with USFWS and further economic and feasibility evaluations, there has been both a reduction in Project acreage to be included and an increase in resource protection measures since submittal of the original Project BA. Both singly, and cumulatively, these revisions reduce anticipated Project effects on SONCC Coho salmon and their CH when compared to effects anticipated from the Project as analyzed in the 4/13/15 BA. Changes will be discussed in the following categories:

1. Specific salvage and site prep and plant Project treatment units were deleted or reduced in size, including deletion of any associated temporary roads and landings;
2. Changes to specific project design features (increased protection measures);
3. Reduction in the extent of proposed roadside hazard tree removal and further restrictions on felling/removal and ground-based equipment in Riparian Reserves (RR);
4. Clarifications related to project design in Riparian Reserves (RR) and cumulative watershed effects modeling; and
5. Inclusion of a strategy for USFS/NMFS/Karuk cooperative Project monitoring.

1. Reduction in Project Unit Footprint

During further analysis as part of consultation with USFWS, some units (both salvage harvest units and site prep and plant units) were deleted from the Project, or reduced in size due to considerations related to Northern Spotted Owl. Also, some units were dropped due to economic and other feasibility considerations. Table 1 in the Fisheries BA displays the acres of salvage harvest and site prep and plant proposed. Below is an update of this table, showing where acreage is reduced in the updated consultation action. Relative to the Project Environmental Impact Statement (EIS), the consultation action analyzed in the 4/13/15 Fisheries BA is the same as Modified Alternative 2; this addendum updates the consultation action (referred to here as the updated consultation action) to make it the same as the action analyzed in the EIS as Modified Alternative 3. Based on these unit deletions and reductions in size, the total Project area subject to salvage harvest is now 5,627 acres.

Table 1. Updated Table 1 from 4/13/15 BA.

	Beaver Fire	Happy Camp Complex	Whites Fire	Grand Total
Site Prep and Plant	1,661	4,918	556	7,135
Logging System				
Ground-based	0	490	40	529
Skyline	0	3,200	210	3,409

	Beaver Fire	Happy Camp Complex	Whites Fire	Grand Total
Helicopter	0	2,519	438	2,956
Total	**0**	**6,208**	**687**	**6,895**
Watershed PDFs	Wet weather operations PDF-1; Skid trail and erosion control: PDFs 2, 7, 8, 10, 27, 28, 29, 30 and 32; Tractor harvest limitations: PDFs 3,4,7,9,12,14 and 26; Cable harvest limitations PDFs 3, 6 and 31.			
Total Acres of RRs within Harvest Units, which will be excluded from salvage harvest.	**1,268**			

2. Changes to Project Design Features

As part of completing an analysis to ensure Project consistency with the Forest Plan, several project design features (PDF) were refined to provide more protection to riparian and aquatic resources, including SONCC coho salmon and their designated critical habitat (CH). The updated PDFs are as follows (new text shown in *italics*): Watershed-4 (related to equipment in RR), Watershed-12 (related to hazard tree removal), and a Wildlife PDF that has been added to further restrict removal of live trees during roadside hazard operations. That new Wildlife PDF is: "*Trees without fire damage will not be felled unless they are an immediate hazard."* Another PDF, Watershed-6, was updated to provide more information on geologic features in specific units. The three updated watershed PDFs are:

Updated Watershed-4

Tractors and mechanical harvesters will be excluded from all RR associated with stream channels, active landslides, inner gorges, and toe zones of dormant landslide deposits. *During roadside hazard tree removal actions within RR, ground based equipment will not leave the road.*

Updated Watershed-6

There will be no salvage logging on active landslides *or toe zones of dormant landslides except for units 5, 23, 32, 39, 55, 56, 57, 59, 64, 226, 268, 406, 520, 524, 525, and 530 which have been field reviewed by the Forest Geologist (see Geology amendment for details on criteria for exceptions).*

Updated Watershed-12

All hazard trees cut within 25 feet of a stream channel *or spring* will be left on site unless they continue to pose a threat to safety or accessibility (see Watershed-4 for equipment exclusion restrictions). *Along all stream channels (perennial and intermittent),* all hazard trees 26 inches diameter at breast height (dbh) or greater that are within the first site tree distance (150-170 feet) of any stream channel will be left on site unless after felling, they continue to pose a threat to safety, infrastructure, forest road drainage system integrity or accessibility. *Any hazard tree (equal or greater than 26 inches dbh) below a road that would contact a fish bearing stream channel if felled that direction will be retained on site.*

3. Changes to Proposed Roadside Hazard

Additional field reconnaissance provided more information on where fire-killed roadside hazard trees would be removed. The Forest deleted from roadside hazard removal any areas that were not directly affected by the 2014 fires. Also, any roads that would need substantial work to again be drivable were dropped from hazard tree removal. As described above, a PDF was updated to prohibit equipment from leaving the road during roadside hazard removal within RR. Six maps covering the entire Project are included at the end of this document and display the reduced extent of roadside hazard in this updated consultation action.

4. Clarifications

During consultation, several topics were raised that the level 1 team believes may not have been sufficiently clear in the 4/13/15 Fisheries BA.

- Cumulative watershed effects modeling (CWE) output did not exclude RR acreage from salvage harvest treatment units (1,268 acres), which will, in fact, be avoided during all Project salvage harvest; therefore effects related to watershed disturbance are over-estimated in CWE modeling;
- Riparian Reserves associated with geologic features are included in the Project in the following manner:
    1) Stream course RR – no salvage harvest
    2) Inner gorge (not associated with annual scour stream channel) – no salvage harvest
    3) Active landslides – no salvage harvest*
    4) Toe zones of dormant slides – no salvage harvest*
    5) Severely weathered/highly dissected granitic lands where they do not overlap with numbers 1-4 above - yes, included for salvage

*There are several exceptions that were field approved for proposed salvage/replanting by the Project geologist, because they showed no indication of movement for at least 10 years and have vegetation conditions that would benefit from planting. These exceptions are generally small in size and many are road fill failures/slips which have been extensively mapped, especially in Walker Cr drainage; the largest is a toe zone area within helicopter Unit 32 which face drains to the Klamath River (see Table 2 below). All exceptions are skyline or helicopter, no ground based exceptions were considered.

Table 2. Exceptions listed in updated Watershed-6 PDF.

Fire area	7th field NAME	Unit #	Acres of Active LS or Toe Zone with Salvage and Planting
HC	**Upper Grider Creek**	520	0.04
HC		524	0.5
HC		525	0.5
HC	**Cliff Valley Creek**	226	0.4
HC	**Lower Grider Creek**	268	0.1
HC		56	1.0
HC		64	0.4
HC	**Tom Martin Creek-Klamath River**	32	18.0 17 of these acres

			are one toe zone
HC	**O'Neil Creek**	5	0.07
HC	**Walker Creek**	23	2.3
HC		55	3.6
HC		57	0.1
HC		59	1.6
HC	**Tompkins Creek**	530	1.1
HC	**Franklin Gulch-Scott River**	39	1.0
Whites	**Music Creek**	406	0.08

5. Added Strategy for Interagency and Tribal Project Monitoring

As part of the Project consultation, the Forest, NMFS, and Karuk Tribe jointly developed a strategy to monitor implementation of Project elements that have the greatest likelihood of impacting SONCC coho salmon and other salmonids. Pre Project, the group will monitor the hazard tree mark where it is proposed near SONCC coho salmon CH; during the Project (especially June-Sept) all parties will share information about where Project water drafting is occurring, jointly monitor those water drafting actions, and help Forest Service Representatives decide where to shift Project water drafting so that impacts to SONCC Coho salmon and its CH are not adverse; also during the Project, the Forest Service and NMFS level 1 team will coordinate in closer monitoring of the status of ground disturbing actions if/when operations are occurring outside of the Normal Operating Season (NOS) or within the NOS during wet weather - to ensure compliance with Forest Service Best Management Practices and Wet Weather Operations standards.

Hazard Tree Mark

As described in the BA, roadside hazard tree removal is proposed in relatively close proximity to SONCC Coho salmon CH along several reaches of the following streams:

Beaver Cr, Walker Cr, Grider Cr, China Cr, Little Horse Cr, East Fork Elk Cr, Cougar Cr, Tompkins Cr, North Russian Cr, North Fork Salmon River, and Whites Gulch.

Prior to implementation of roadside hazard tree removal, the hazard tree mark downslope of roads adjacent to these creeks will be checked by fisheries biologists working for Forest Service, NMFS, or Karuk Tribe.

- Beaver Cr – Forest Service review on 6/5/15 confirmed that there are no hazard trees in close proximity to Coho CH in Beaver Cr, including West Fork Beaver Cr. Forest Service timber staff confirmed that Project timber sales of hazard trees do not include trees along the mainstem and West Fork Beaver Cr;
- East Fork Elk Cr - Forest Service and NMFS level 1 team reviewed hazard tree marking on 6/9/15 and confirmed that trees in close proximity to Coho CH have been marked according to description;
- Tompkins Cr – Forest Service review on 6/12/15 confirmed that trees in close proximity to Coho CH have been marked according to description; and
- The remaining creeks listed will be checked for appropriate hazard tree marking by July 15.

Water Drafting

The Fisheries BA identifies all the water drafting locations within the most current KNF GIS layers, and project design features related to where, and the manner in which, water is drafted. As part of designating water drafting sites for timber sale operations, Forest Service fisheries biologists will be involved in the process in determining where water will be drafted. Especially during June through September, Forest Service fisheries biologists will coordinate with NMFS and Karuk fisheries biologists about where Project-related water drafting is occurring, and this water drafting will be monitored by fisheries biologists working for Forest Service, NMFS, or Karuk Tribe.

Wet Weather Operations Monitoring

Starting in the fall when wet weather is forecast, the Level 1 team will coordinate with timber sale administrators to track what ground disturbing actions are ongoing. At least once a month during the months outside of the NOS, the level 1 team will meet with timber staff and will schedule field visits to ongoing Project actions accordingly. These updates will identify where delayed or unfinished Project operations may pose erosion risks; and assess the likelihood that Project sediment mobilization and/or erosion impacts has exceeded, or is expected to exceed, wet weather operation standards. As described in wet weather operations standards, immediate action will be taken to hydrologically stabilize Project areas with erosion risks, to avoid or minimize sediment mobilization.

Reduction in Effects to SONCC Coho Salmon and CH

The proposed action includes five Project Elements:

- Salvage and Reforestation
- Fuels Reduction
- Hazard Tree Removal
- Temporary Roads, Landings and Water Drafting
- Legacy Site Treatments

Changes to the proposed action, as described above, result in a reduction of potential effects to SONCC Coho salmon and CH related to the following Project Elements: salvage and reforestation, temporary roads and landings, and hazard tree removal.

Salvage and Reforestation

Project units have been reduced by about 3,000 acres, distributed across the project area. The following table updates Table 2 of the Fish BA.

Table 3. Updated Table 2 of 4/13/15 Fisheries BA, showing proposed salvage acreage by watershed.

5th Field Watershed	Proposed Salvage Acres 4/13/15 BA	Proposed Salvage Acres Updated Action
Beaver Creek	129	0
Elk Creek	651	250
Horse Creek-Klamath River	221	0
Humbug Creek-Klamath River	0	0

Lower Scott River	1619	636
Indian Creek	0	0
North Fork Salmon River	741	687
Seiad Creek-Klamath River	6107	5103
South Fork Salmon River	0	0
Thompson Creek-Klamath River	350	219
Ukonom Creek-Klamath River	0	0
Total	**9,818** Approximately 1,990 acres of this total were within stream course RR and therefore excluded from salvage harvest	**6,895** Approximately 1,268 acres of this total are within stream course RR and therefore excluded from salvage harvest

Updated Effects

The BA describes the expected effects from salvage and reforestation actions to sediment related habitat indicators (pgs. 40-46), water quality (pgs. 55-56), and riparian function including LWD (pgs. 60-62). The analysis concludes that these actions would have only minor and insignificant effects to SONCC Coho salmon and CH due to the exclusion of stream course RR and inner gorge areas and implementation of PDFs that sufficiently minimize disturbance outside of RR.

Figure 3 in the BA displays how inner gorges and other geologic features overlap Project units in lower Grider and Walker Creek. The figure below updates the original Figure 3 in the 4/13/15 Fisheries BA, and displays how the updated action units overlap these features.

The BA, pg. 40, states that "Stream course RR, as well as inner gorges and active landslides, are excluded from salvage harvest units." As described above, this addendum clarifies that there are several exceptions that were field reviewed and approved by the Forest Geologist because they are relatively small areas that show no indication of movement in at least 10 years and proposed salvage/reforestation would result in a net benefit to slope stability (updated Watershed-6 PDF). The Project Geology Report describes that there is expected to be no effect to slope stability from salvage harvest, even on these small areas of unstable lands listed as exceptions. The level 1 team reviewed the exceptions listed in Table 2 above and considered potential impacts to fish habitat (including SONCC Coho salmon CH). The largest area is a toe zone within helicopter Unit 32 located upslope of Highway 96 in a face drainage to the Klamath River, just downstream from where Kuntz Cr joins the Klamath River. As described in the Project Geology Report, the current landslide risk in this 7th field watershed is Moderate and the Forest Geologist expects there is low likelihood of landsliding associated with helicopter salvage harvest on the potentially unstable toe zone in Unit 32. Potential Project effects to slope stability, or landsliding risk, are related to the infrastructure needed for logging; these effects are summarized below under Temporary Roads and Landings and in more detail in the Project Geology Report. At the site scale there is a net benefit from salvage/reforestation on these areas of unstable lands because the removal of dead trees does not increase the risk of landslides and planting is likely to reduce the duration of elevated landsliding risk.

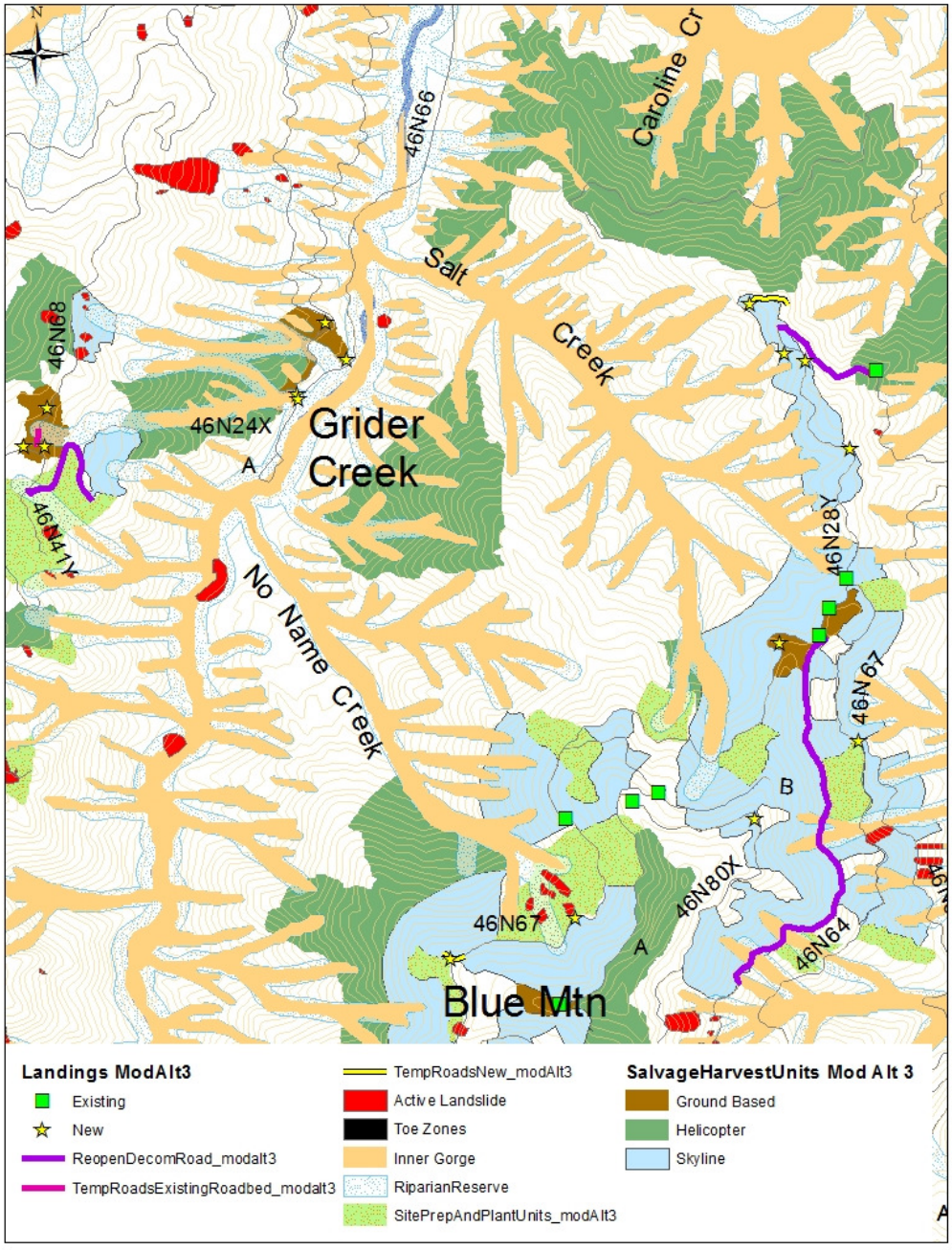

Figure 1. Updated Figure 3 of Fish BA.

Several areas in relatively close proximity to CH were dropped from salvage harvest in the following drainages: Little Elk Cr/EF Elk Cr, Grider Cr, and Walker Cr (Figure 2 displays where salvage is reduced in Grider and Walker Creek areas). All salvage harvest was dropped from Beaver and Horse Cr-Klamath River watersheds (Beaver Fire), and in Cougar Cr and Doolittle Cr drainages (Happy Camp Fire). Overall these changes reduce ground disturbance outside of RR and incrementally reduce cumulative watershed effects, but this reduction does not change the not likely to adversely affect (NLAA) determination of the Project on SONCC coho salmon and its designated CH.

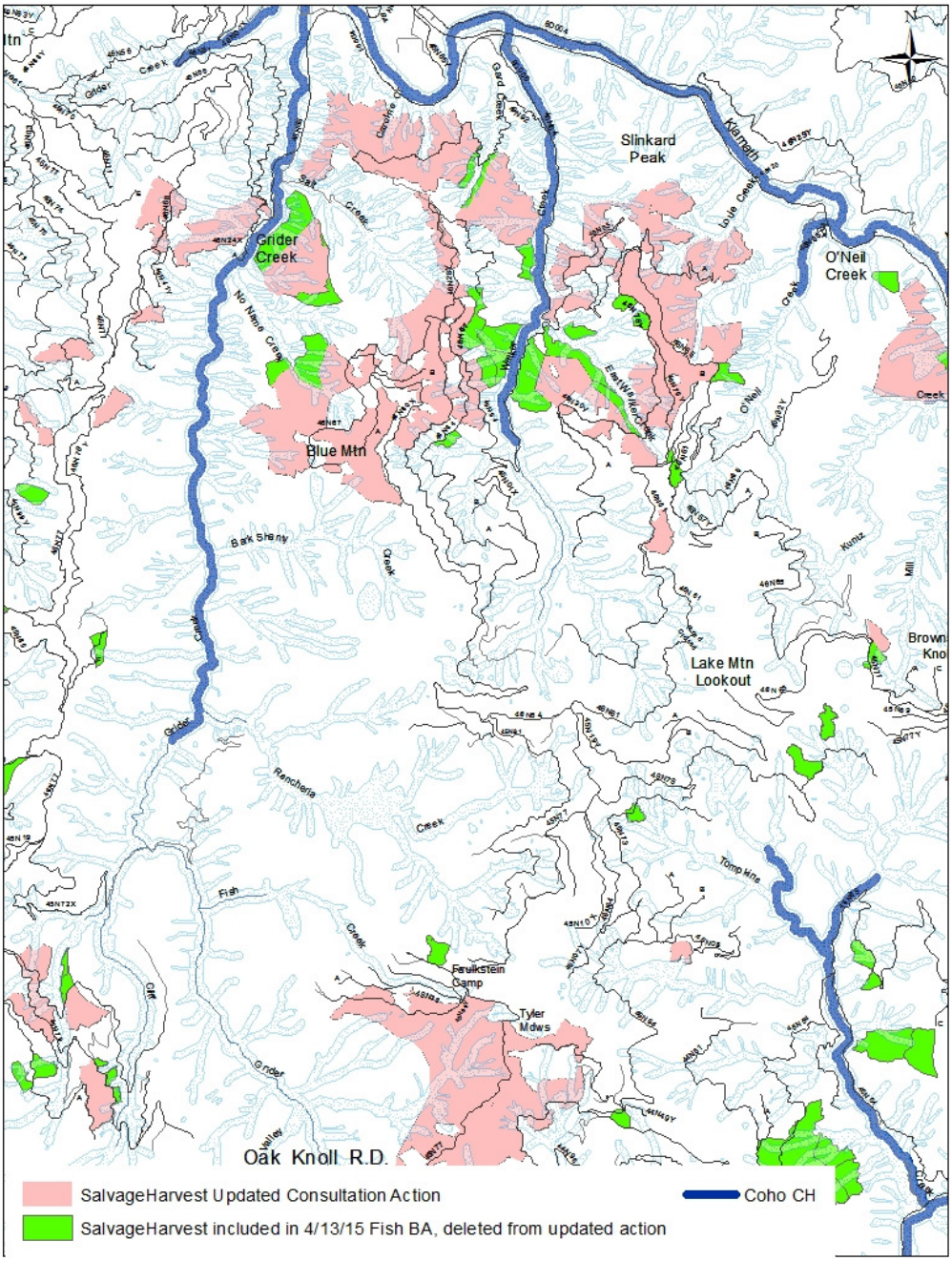

Figure 2. Proposed salvage harvest in the Grider and Walker Creek areas, showing the reduced area proposed in Updated Consultation Action. The green polygons have been deleted from the updated consultation action.

Temporary Roads and Landings

Implementation of the updated reduced action would involve less temporary roads and landings. Temporary road actions and landings that were removed from the Project, due to deletion of associated units, include several near-stream roads that were identified in Table 32 of the 4/13/15 Fisheries BA. The table below updates Table 32.

Table 4. Updated Table 32 from 4/13/15 BA, new text in italics.

Receiving Stream Name	Road Type	Confirmed Stream Type Crossing	Comments
Grider Creek	Decomm. Road 46N41YA	2 perennial	One crossing is legacy site; the Project will reduce sediment in the long term.
Walker Creek	Decomm. Road 46N63	No crossing	No stream crossing features; old road bed cut in bedrock. *Several small road fill slips/slides occur below road bed, more effects information on this road below under Updated Effects.*
Cliff Valley Creek	Decomm. Road 46N77	1 Intermittent	Stable, moderate risk
China Creek	Decomm. Road 46N78	5 Intermittent	*Use of this road segment has been reduced, only the beginning 0.55 miles of the road will be used including one intermittent stream crossing. The 4/13/15 Fisheries BA analyzed use of 1.1 miles of this road with 5 intermittent or ephemeral channel crossings.* Stable, low risk
Kuntz Creek	Existing Temporary Road	No crossing involved in road (except crossing of private diversion ditch)	Road has drainage problems; use of road is low risk; the Project will reduce sediment long term
O'Neil Creek	Existing Temporary Road	1 intermittent	*This road segment will no longer be used for the Project.* Road has drainage problems; intermittent channel captured by road prism; use of road is low risk; the Project will reduce sediment long term

Other temporary roads that did not involve near stream actions were dropped from the Project, along with many landings. All temporary roads and landings in the Beaver Fire were dropped. The following tables update Tables 7 and 8 from the BA and display the number of temporary roads and landings that remain in the updated consultation action.

Table 5. Updated BA Table 7, temporary road actions.

	Project Temporary Road Actions
Miles New Temp. Road	3.2
Miles Temp. Road Existing Alignment	4.6

Miles Reopened Decomm. Roads	4.8
Total Miles of Temporary Road Construction	**12.7**
# of Temp Road Stream Crossings	4
# of Temp Road Stream Crossings in anadromous salmonid habitat	0
Watershed PDFs	New temporary roads: PDFs 5, 23, 24 Watering roads: PDFS 18 Culvert replacements 20 Water drafting 37, 38.

Table 6. Updated BA Table 8, temporary road miles by 5th field watershed.

5TH-FIELD	Reopen Decomm. Road	Temp. Roads on Existing Roadbed	Temp. Roads New	Total Miles
Beaver Creek	0	0	0	0
Elk Creek	0.2	0.7	0.2	1.1
Horse Creek-Klamath River	0	0	0	0
Humbug Creek-Klamath River	0	0	0	0
Indian Creek	0	0	0	0
Lower Scott River	0	0.8	0	1.1
North Fork Salmon River	0	0.6	0	0.6
Seiad Creek-Klamath River	4.0	1.8	2.9	8.7
South Fork Salmon River	0	0.1	0.0	0.1
Thompson Creek-Klamath River	0.6	0.5	0	1.1
Ukonom Creek-Klamath River	0	0	0	0
Total Miles	**4.8**	**4.6**	**3.2**	**12.7**

The 4/13/15 Fisheries BA identified six new landings within RR that were approved for use by watershed specialists. None of these new landings in RR were dropped in the updated action. For the updated action, 95 landings were dropped. These landings are either existing landings in RR, or new/existing landings outside RR. The table below displays how landings are distributed across 5th field watersheds for the updated consultation action.

Table 7. Updated 4/13/15 Fisheries BA Table 9, types and numbers of Project landings, by 5th field watershed.

5th-field Watershed	Existing Landings	New Landings	Total
Ground Based Landing			
Beaver Creek	0	0	0
Horse Creek-Klamath River	0	0	0
Lower Scott River	3	3	6
North Fork Salmon River	0	1	1
Seiad-Creek-Klamath River	12	5	17
Thompson Creek-Klamath River	0	6	6
Total	**15**	**15**	**30**
Helicopter Landing			
Elk Creek	0	4	4

Lower Scott River	5	1	6
North Fork Salmon River	6	1	7
Seiad-Creek-Klamath River	14	28	42
Thompson Creek-Klamath River	0	0	0
Total	**25**	**34**	**59**
Skyline Landings			
Elk Creek	0	3	3
Lower Scott River	0	4	4
North Fork Salmon River	0	6	6
Seiad-Creek-Klamath River	0	10	10
South Fork Salmon River	0	0	0
Thompson Creek-Klamath River	0	3	3
Total	**0**	**26**	**26**
Total number of landings	**40**	**75**	**115**
New Landings in RRs	Landings # DZ03, DZ10, DZ23, L043, L044, and L090.		
Watershed PDFs	Use of existing landings: PDF 26 Expansion of landings: PDF 26 Erosion control on landings: PDF 26 Restoration of soil cover: PDF 26		

Updated Effects

The 4/13/15 Fisheries BA describes the expected effects of temporary road and landing actions to sediment related habitat indicators (pgs. 48-52), water quality (pgs. 57-58), and riparian function including LWD (pgs. 63-64).

Reopening of decommissioned roads, use of temporary roads on existing roadbeds, construction of new temporary roads and the construction of new landings were considered high disturbance and incorporated into the 7th field scale landslide risk assessment in the Project Geology Report. There are two primary site scale effects of reopening decommissioned roads, use of temporary roads on existing roadbeds, construction of new temporary roads and the construction of new landings; these effects are described in the Project Geology Report and summarized here.

The first effect is change to the hillslope mass balance such as undercutting and increasing the weight in unstable areas (spoil piles) from earthwork. Slope stability is most susceptible to the change in mass balance with new temporary road construction. There are no new temporary roads or landings being constructed on toe zones of dormant landslides, active landslides or inner gorges; only use of existing roadbeds will occur. Project design feature Watershed-20 restricts excess material from temporary roads, landings and other actions from being stored on active landslides (which include road fill failures/slips). This minimizes the potential for landslide re-activation due to increased weight. The second effect is the potential for poor drainage on the roads and landings which concentrates water onto hillslope which can, in turn, exacerbate existing unstable lands or create new landslides. The cessation of the use of temporary roads per the Wet Weather Operations (Project Design Feature Watershed-1) will minimize any rutting or tire tracks that can concentrate water on the road and hillslope. Project design feature Watershed-22 requires hydrologic stabilization of all temporary roads which includes control of the drainage on the roadbed. Project design feature Watershed-23 requires new landings to be configured for long-term drainage with the intention to (re)establish natural runoff patterns.

While PDFs minimize the effects to landslide risk, they do not eliminate them. The likelihood of a landslide at the site scale from temporary road actions and the construction of new landings will be increased. The increase will be highest during implementation of the project and will be reduced after the hydrologic stabilization has occurred at the completion of the Project. At the site scale, the landslide risk will remain above pre-project levels through the first winter after stabilization. Following the first winter they will likely be back to pre-project levels, or below in areas were legacy sites are being addressed on temporary road access. Temporary road actions were reviewed in the field to assess the presence of active features and potential consequences of landsliding to fish habitat. With the updated consultation action (and the action analyzed in 4/13/15 Fisheries BA), active features associated with proposed temporary road actions on existing road beds are primarily road fill failures/slips. As described above, re-opening these roads, using them, and then re-closing them increases the likelihood of further, or other, failures along the road prism as it re-adjusts. Table 4 above displays the temporary road actions most likely to have a noticeable influence on hillslope processes that translate to downhill fish habitat. The temporary road action remaining in the Project that may be most likely to experience fill failures or slides is the re-opening of decommissioned road 46N63 in Walker Cr drainage (visible in Figure 1 map above). Field review of this existing roadbed by the Forest Geologist found several fill failures/slides below the road which led to the conclusion that these fill slips, or other new slips along the roadbed, are likely when the roadbed is re-opened, used and re-adjusts after use and hydrologic stabilization. In consideration of the history of how this road adjusted during the 1997 flood event, its current condition and geology, and the distance to CH (about 1 mile downslope with another road in between), there is low likelihood that post-Project slides/slips initiated from this roadbed would travel down to fisheries habitat or have any measurable effect to SONCC Coho salmon CH.

The changes to temporary road actions reduce site scale short term negative effects to aquatic habitat disclosed in the BA (pgs. 49-51) only in the O'Neil Cr drainage; as described in the BA, use of this old roadbed would require fixing existing erosion-related problems which would have long term benefits to protection of water quality in this drainage. These potential long-term beneficial effects are to be foregone with the updated consultation action as these temporary road beds near the bottom of O'Neil Cr drainage will not be used and then appropriately hydrologically stabilized. They are to remain in their current condition and Project temporary road actions will have no effect to SONCC Coho salmon CH in O'Neil Creek.

Other temporary roads dropped did not involve near stream actions and therefore the overall reduction in mileage of temporary road actions (from 16.4 miles to 12.7 miles) does reduce potential site-scale effects to hillslope processes including the sediment regime, but this reduction would not change the NLAA effect determination of the Project on SONCC coho salmon and its designated CH. The reduction in use of existing landings within RR, and reduction of new and existing landings outside of RR, results in less potential short term impact to watershed resources and fish habitat. However, this reduction in effects would not change the NLAA effect determination of the Project on SONCC coho salmon and its designated CH.

Roadside Hazard Tree Removal

Proposed roadside hazard tree removal has been changed in the following manner:

- Reduced extent – maps at the end of this document display where this action is reduced;
- Increased retention of large wood – hazard trees 26 inches dbh and greater, within one site tree distance of all streams (intermittent and perennial), will not be removed;

- Reduced ground disturbance – during implementation of roadside hazard tree removal in RR, equipment is prohibited from leaving the road; and
- Increased retention of green trees – trees that were not affected by 2014 fires will not be felled unless they pose an immediate hazard.

These changes result in reduced extent of potential impacts to SONCC Coho salmon and CH. As displayed in the following maps, areas dropped for roadside hazard removal include a few reaches in close proximity to CH. These include reaches of the Scott River and Klamath River as well as Kelsey, China, and Elk creeks. Other areas dropped that are in relatively close proximity to CH in an adjacent stream include Doolittle Cr, China Gul (NF Salmon), and Taylor Cr (NF Salmon). Table 8 below displays, by watershed, how many miles of CH are within 200 feet of roadside hazard roads, and the reduction in miles of CH potentially affected by roadside hazard analyzed in 4/13/15 BA relative to the updated action. Table 9 displays, by watershed, how many miles of intermittent and perennial stream total may be affected by proposed roadside hazard tree actions in the updated consultation action.

Table 8. Miles of Coho CH in close proximity to roadside hazard tree removal, showing where miles are reduced in the updated consultation action.

5th field Watershed	Miles of Coho CH within 200 feet of roadside hazard roads **4/13/15 BA**	Miles of Coho CH within 200 feet of roadside hazard roads **Updated Consultation Action**	Total CH miles in watershed
Humbug Creek -Klamath River	2.5	0	7.0
Beaver Creek	1.5	1.5	16.4
Horse Creek – Klamath River	0.3	0	26.4
Seiad Creek – Klamath River	2.9	1.3	38.5
Lower Scott River	3.6	1.0	26.7
Thompson Creek – Klamath River	1.1	0.6	13.7
Elk Creek	4.1	2.4	22.1
Uknonom Creek	0.2	0	8.4
North Fork Salmon River	5.7	5.2	32.3
TOTAL	22.0	12.0	191.5

Table 9. Miles of intermittent and perennial stream in close proximity to Project roadside hazard tree removal, Updated Consultation Action.

5th field watershed	Miles of perennial stream within 200 feet from roadside hazard tree removal roads	Miles of intermittent stream within 200 feet from roadside hazard tree removal roads	Total stream miles in watershed -intermittent and perennial **Percentage of streams miles potentially affected by Project roadside hazard tree removal**
Beaver Creek	3	4	277 **2.5%**
Horse Creek-Klamath River	0	2	322 **0.6%**
Seiad Creek-Klamath River	6	0	205 **2.9%**
Lower Scott River	4	5	476 **1.9%**
Thompson Creek-Klamath River	2	4	297 **2.0%**
Elk Creek	5	4	300 **3.0%**
North Fork Salmon River	11	5	654 **2.4%**
TOTAL	31	24	2,531 **2.2%**

Updated Effects

The BA describes the expected effects of roadside hazard tree removal to sediment related habitat indicators (pgs. 47-48), water quality (pg. 57), and riparian function including LWD (pgs. 62-63). As described in the BA, potential effects of roadside hazard tree removal are associated with soil disturbance, effects to stream shade, and removal of wood that provides various functions in the riparian zone (soil retention and productivity, and large wood loading to streams). The updated action reduces effects in each of these categories. Soil disturbance is reduced by

restricting ground based equipment to roads when implementing hazard tree removal within RR. Potential effects to stream shade are reduced by restricting hazard trees targeted for removal to fire injured/killed trees. As described in the BA (pg. 57), potential effects to stream shade are associated with the removal of green hazard trees. The updated action restricts the felling of green hazard trees unless they are deemed to be an immediate hazard which will almost eliminate the felling/removal of live trees in the Project. This reduces the level of potential effect this action may have on stream shade across the reduced area it is now proposed.

Effects related to loss of wood from riparian areas are reduced by extending the retention of all hazard trees 26 inches dbh and greater when they are within one site tree distance of all streams (the action analyzed in the 4/13/15 Fisheries BA retained these trees only adjacent to fish-bearing streams). In this manner, the project now ensures that any larger hazard trees that must be felled within stream LWD recruitment zones will be retained. Removal of hazard trees less than 26 inches dbh within stream LWD recruitment zones is included in order to address fuels-related considerations summarized below. Also related to fuels, the removal of hazard trees is included within the outer portions of Riparian Reserve (generally outside of stream LWD recruitment zones); fish-bearing streams have Riparian Reserve that is two site trees wide on both sides of the stream, the outer portion refers to the area farther than one site tree from a stream.

As part of Project planning and effects analysis, biologists and fuels specialists worked to find consensus on what fuels reduction actions are needed in Riparian Reserve in order to manage these areas within their historical range of variability. The team relied upon Forest Plan direction, historic information including fire history, field review, and best available information including scientific literature. Research specific to fire regimes and forest management in the Klamath Mountains are particularly relevant, including Skinner, 1997; Taylor and Skinner, 1998; and Skinner, 2003. In order to manage riparian areas within their natural range of variability, the historical fire regime must be an important and explicit consideration (Skinner 1997). As described in the literature, the Mediterranean climate of the Klamath Mountains is characterized by pronounced annual drought (independent of any prolonged drought). Even Riparian Reserves in the Klamath Mountains regularly experience conditions where fires can easily ignite and spread. Field review of existing conditions in the project area further reinforced for biologists the need to propose fuels and site preparation treatments in Riparian Reserves, and that removal of hazard trees 14-26 inches dbh within Riparian Reserves is consistent with LWD objectives and appropriate management to maintain and restore riparian function within the natural range of variability. Field review also included evaluation of potential effects of proposed hazard tree removal in the outer Riparian Reserve (farther than one site tree distance from fish-bearing streams). In consideration of both the historic fire regime (frequent mixed severity fire) and the current fire regime which is a product of mostly effective suppression then high severity fire, allowing hazard tree removal in these outer portions of the Riparian Reserve is likely to provide for more effective fuels management and decrease the probability that future high severity fire would reach near stream areas. For these reasons, and considering the relatively minor amount of near stream habitat that would be exposed to effects of these actions (Table 9), proposed hazard tree removal would have only discountable effects to large wood recruitment.

The reduction in extent, and increase in protection measures for proposed roadside hazard tree removal results in less potential effects to SONCC Coho salmon CH. This reduction in effect is not expected to change the NLAA effect determination of the Project on SONCC coho salmon and its designated CH.

Conclusions

The updated consultation action is expected to result in less potential effects to SONCC Coho salmon and its designated CH as described above. The effects determination remains that this action May Affect, and is Not Likely to Adversely Affect Coho Salmon and CH.

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